

Improving to Meet the Needs of Soil Survey


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History

1960	Seventh Approximation
1967	Supplement to Seventh Approximation
1975	Soil Taxonomy Published
1983-98	8 Editions of the “Keys to Soil Taxonomy”
1998	2nd Edition of Soil Taxonomy

Following are major improvements made since 1992.


Aquic Conditions



▲ Soil from Alaska with episaturation. In spring, the upper part of the soil thaws and water perches above the frozen layer.

The International Committee on Aquic Conditions, chaired by Johan Bouma, defined aquic conditions in terms of saturation, reduction, and redox features. The Committee developed the concepts of endosaturation, episaturation, anthraquic conditions, and oxyaquic subgroups.

Vertisols



▲ Udert from Texas. Note the “bowl-chimney” morphology.

Juan Comerma chaired the International Committee on Vertisols and defined Vertisols to include soils with a cryic temperature regime and to provide unique taxa for soils with water tables at or near the soil surface.

References

Soil Survey Staff. 1960. Soil Classification: A comprehensive system, 7th Approximation. U.S. Gov. Print. Office. Washington, DC.
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Soil Survey Staff. 1983. Keys to Soil Taxonomy. Cornell University. Ithaca, NY.
Soil Survey Staff. 1985. Keys to Soil Taxonomy. Second printing. Cornell University. Ithaca, NY.
Soil Survey Staff. 1987. Keys to Soil Taxonomy. Third printing. Cornell University. Ithaca, NY.
Soil Survey Staff. 1990. Keys to Soil Taxonomy. Fourth edition. Virginia Polytechnic Institute and State University. Blacksburg, VA.

Spodosols



The International Committee on Spodosols, chaired by Robert Rourke, defined Spodosols primarily on field morphology and, when necessary, on data obtained by ammonium-oxalate extractions.

▲ Spodosols can be identified largely by field morphology. Colors are important criteria for identifying the albic and spodic horizons in this soil.

The International Committee on Aridisols, Ahmed Osman, chair, provided more useful suborders for the classification and interpretation of Aridisols.

Old Suborders	New Suborders
Argids	Cryids
Orthids	Salids
	Durids
	Gypsid
	Argids
	Calcids
	Cambids



Aridisols

▲ The revisions to this order provide more information at a higher level. This soil was a Gypsiorthid but is now a Petrogypsid. The petrogypsic horizon is recognized at the great group level.

Families

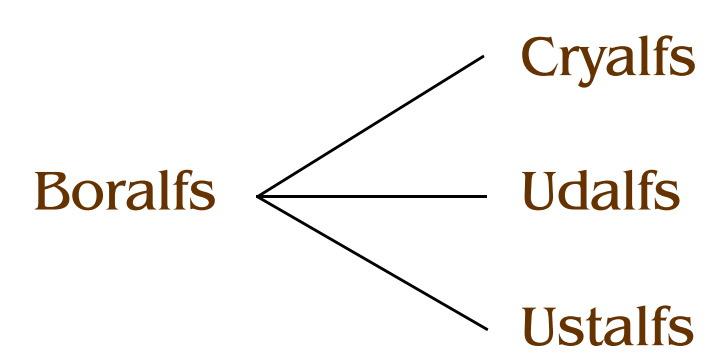
CEC / Clay
Class
≥ 0.60
Superactive
0.40 to 0.60
Active
0.24 to 0.40
Semiactive
< 0.24
Subactive

The International Committee on Families, chaired by Ben Hajek, refined and introduced new mineralogy classes. The apparent cation-exchange capacity of the clay fraction is used to indicate clay mineralogy in mixed and siliceous families. Clay activity is a soil property useful in making soil interpretations.

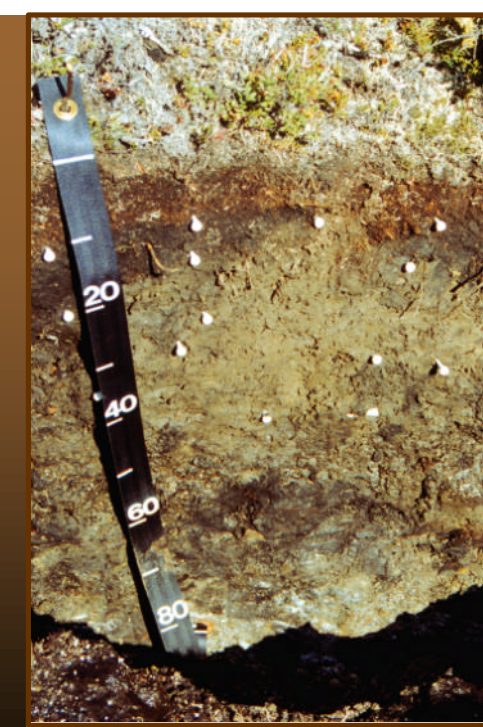
▲ These classes provide information at the family level for issues related to water quality.

Alfisols

The Boralfs were eliminated in the Alfisols, and Cryalfs were added for similar reasons as in the Mollisols. The Boralfs are divided as follows:



Gelisols



A twelfth order, Gelisols, was recommended by the International Committee on Permafrost-Affected Soils, James Bockheim, chair. Gelisols include all soils with permafrost within 100 cm or permafrost within 200 cm and gelic materials. Three suborders are recognized: Histels, Turbels, and Orthels.

▲ A Turbel from the Northwest Territories of Canada has evidence of cryoturbation in the form of discontinuous and broken horizons.

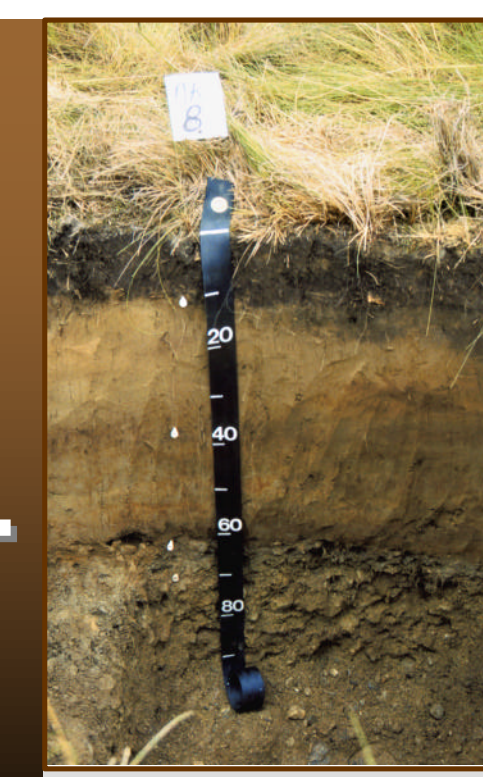
The Borolls were eliminated in the Mollisols, and Cryolls were added. Cryolls eliminate the redundancy in the Cryoboroll name. Frigid Borolls are now included with the Udolls and Ustolls.



Mollisols

▲ Previously a Boroll, this soil is now an Ustoll in a frigid family. Even in a frigid temperature regime, the soil moisture regime dictates use and management of the soil.

Inceptisols



The Inceptisols were revised. The soil moisture regime is an important characteristic and is recognized at a high level. The Cryepts were also added.

Old Suborders	New Suborders
Aquepts	Aquepts
Plaggepts	Anthrepts
Tropepts	Cryepts
Ochrepts	Ustepts
Umbrepts	Xerepts
	Udepts

▲ Previously, this soil was an Ochrept, but is now a Cryept. Soil moisture regimes are recognized at a lower level in Cryepts because the growing season is short due to cold temperatures.

Active Committees

The following committees are working on future improvements:

- International Committee on Anthropogenic Soils (ICOMANTH) - Dr. Ray Bryant
- International Committee on Soil Moisture and Temperature Regimes (ICOMMOTR) - Dr. Ron Paetzold

Conclusions

- The new edition of Soil Taxonomy reflects our current knowledge of soils.
- Soil Taxonomy is dynamic and will continue to change with the science.



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